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ACQUISITION RESEARCH SPONSORED REPORT SERIES

Services Supply Chain in the Department of Defense: A Comparison of Acquisition Management Practices in the Army, Navy, and Air Force

23 August 2010

by

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14. ABSTRACT

This paper presents the results of our empirical studies of current management practices in services acquisition in the Army, Navy, and Air Force. The primary objective of these studies was to develop a comprehensive understanding of how services acquisition is being managed within as well as across individual military Services. In these empirical studies, we developed and deployed a webbased survey to collect primary data. Specifically, we studied the current management practices in areas such as contract characteristics, and we studied acquisition management methods, including regional- or installation-level acquisition use of the project management approach, acquisition leadership, and ownership of requirements. We also studied other program management issues such as the ability of personnel responsible for acquisition, adequacy of acquisition billets and their fill rates, and training provided to services acquisition personnel. We found that for the most part, the services contracts awarded and administered conformed to our expectation. For example, most services contracts are competitively bid, fixed-priced awards with minimal use of any type of contract incentives. The survey data also confirmed that the Navy uses a regional approach in services acquisition, while the Army and the Air Force use an installation-level approach. These differences, in turn, appear to be having important implications for other acquisition management practices, such as the use of project management and contract surveillance. One surprising finding of the study was that the project teams are often led by the contracting officer as opposed to by a formally designated project manager who is responsible for the overall success of the service project. Finally, the survey respondents indicated that the number of authorized staff positions for services acquisition was inadequate and that the existing billets were inadequately filled. The analysis and comparison of management practices in different military services was used as the basis to develop, and report in this paper, our preliminary recommendations for improving the management of the services supply chain in the Department of Defense.

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Abstract

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recommendations for improving the management of the services supply chain in the Department of Defense.

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1.0   Introduction

The service sector represents the largest and fastest growing segment of the economies of the U.S. and other developed countries. For example, in the U.S., services accounted for over 80% of employment in the year 2004 (Department of Labor, 2005). This growth of services in the overall economy has been mirrored by the growth of services acquisition in private-sector companies (Smeltzer & Ogden, 2002) and in the government. For example, as seen in Figure 1, the procurement of services in the DoD has continued to increase in scope and dollars in the past decade. Even considering the high value of weapon systems and military equipment purchased in recent years, the DoD has spent more on services than on supplies, equipment, and systems together (Camm, Blickstein, & Venzor, 2004). Specifically, the DoD obligations on contracts have more than doubled between fiscal years 2001 and 2008—to over $387 billion, with over $200 billion spent just for services (GAO, 2009c). The procured services presently cover a very broad set of service activities—including information technology and telecommunications services; maintenance and repair of equipment; professional, administrative, and management support; and transportation, travel, and relocation services.
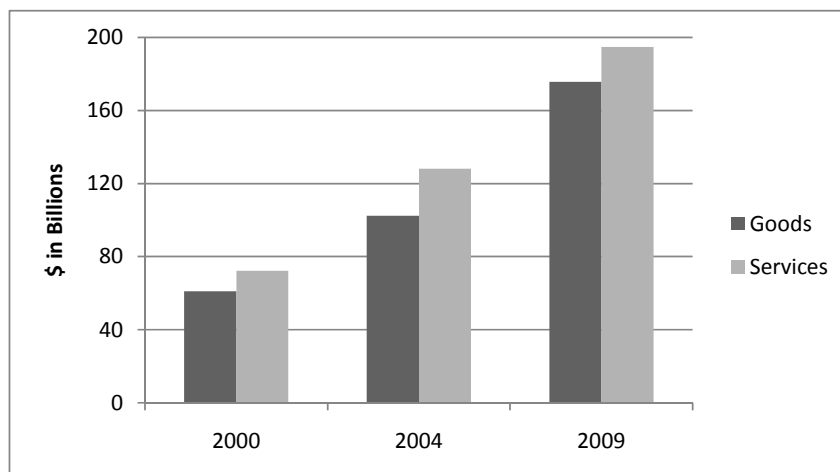
Figure 1.   DoD's Contracts for Goods and services (2000–2009)

As the DoD's services procurement continues to increase in scope and dollars, the DoD must give greater attention to the management of services contracts. However, the increase in services contracting has coincided with a reduction in the federal government workforce. For example, the size of the federal workforce fell from 2.25 million in 1990 to 1.78 million in 2000 (GAO, 2001). This mismatch between the increasing workload and the decreasing size of the workforce, and the unique nature and complexities associated with services acquisition, has possibly created an environment wherein following the best practices has not always been feasible. For example, between 2001 and 2009, the Government Accountability Office (GAO) issued 16 reports related to trends, challenges, and deficiencies in contracting for services. In addition, between 2002 and 2008, the DoD Inspector General (DoD IG) issued 142 reports on deficiencies noted in the DoD acquisition and contract administration process. Both, the GAO and DoD IG have identified market research, contract type, project management, requirements management, personnel training, and contractor oversight as just some of the critical deficient areas in services contracts. Further discussion of these deficiencies is provided in Table 1.

- The government is required to conduct market research to determine the market's capability for providing the required supply or services and the government's appropriate contracting strategy for the procurement (Rendon & Snider, 2008). Reports have shown that the DoD has not conducted adequate market research during procurement planning of services contracts (GAO, 2002a; DoD IG, 2009).

- Selecting the appropriate contract type is essential to ensuring the appropriate sharing and allocation of risk between the government and the contractor. Fixed-price contracts allocate the majority of the cost risk to the contractor, while cost-reimbursement contracts provide for most of the cost risk to be borne by the government. Government reports have shown that inappropriate contract types were used in services contracts, resulting in more risk to the government (GAO, 2001; DoD IG, 2009).

- The use of project management tools and techniques, such as designated formal project managers, project teams, and project lifecycles, have been considered a best practice in managing services contracts. GAO reports have shown that the DoD lacks the proper management structure and processes for managing services contracts (GAO, 2007b; DoD IG, 2009).

- Sufficient requirements management is essential for identification and development of needs for the DoD. If requirement management is insufficient, the resulting services contracts will not adequately meet the customer's needs. The GAO and DoD IG reports have identified poorly defined requirements and insufficient requirements management as problems in services contracts (GAO, 2007b; DoD-IG, 2009).

- Defense contract management requires specialized skills and competencies that come from extensive training and experience. A properly trained and competent acquisition workforce is considered the heart of successful defense acquisition management. With the downsizing of the DoD workforce, the lack of a qualified acquisition and contracting workforce to manage the increase workload in DoD services contracts continues to plague DoD services contracting efforts (GAO, 2002b, 2009b).

- The essence of DoD contract management is the proper administration of contracts and oversight of contractor performance. The lack of effective contract administration and contractor oversight increases the government risk of not ensuring total value for the dollars spent on services contracts. The GAO and DoD IG reports have consistently identified contract administration and contractor oversight as problem areas in the management of services contracts (GAO, 2005, 2007a, 2007b; DoD IG, 2009).

Table 1. Deficiencies in Services Contracting

Indeed, DoD contract management has been listed as a "high-risk" area by the GAO since 1992 (GAO, 2009a). This high-risk status reflects the DoD's challenges in achieving their desired outcomes in terms of meeting the services procurement cost, schedule, and performance objectives. The DoD is at risk of paying higher prices for services than necessary. Recently, the DoD Director of Defense Procurement and Acquisition Policy (DPAP) identified the inappropriate use of services contracts in the DoD (DPAP, 2007) and is planning to take actions to improve contracting for services throughout the DoD (DPAP, 2006).

Service production differs from manufacturing production in several ways due to distinguishing characteristics of services. There is a growing body of literature on operations management in service firms. The key characteristics of services discussed in textbooks (Fitzsimmons & Fitzsimmons, 2006; Metters, King-Metters, & Pullman, 2003) include the intangibility of service output, co-production, simultaneity of production and consumption, the inability to store services, and the complexity in the definition and measurement of services. These characteristics also lead to differences in the marketing of services (Lovelock, 1992; Hutt & Speh, 1998).

Given these differences in the production and marketing of services as opposed to that of manufactured products, it is natural to ask if the acquisition of services is essentially the same as acquisition of products or do differences exist? And, if the differences exist, then what they are, in general and for specific services, and what do they imply for the management of services acquisition? Given the growth in size and scope of services acquisition in today's economy, these questions are undoubtedly important.

A survey of academic literature indicates that there exist only a handful of studies aimed at addressing some of these questions. For example, Smeltzer and Ogden (2002) examined purchasing professionals' perceived differences between purchasing materials and purchasing services; Ellram, Tate, and Billington (2004) developed a supply chain framework appropriate for a services supply chain by comparing and contrasting the applicability of three product-based manufacturing

models; and Schiele and McCue (2006) studied the acquisition of consulting services in the public sector. Although these and other studies have started to address some of the questions identified above, for the most part, these questions remain unanswered. Furthermore, given the peculiarities of government procurement and the GAO and DoD IG reports on the deficiencies in the DoD acquisition and contract administration processes, there exists a unique and significant opportunity for conducting research into the management of services acquisition in the DoD.

We have addressed the need for research in the area of services acquisition by undertaking a series of research projects. The first two research projects were exploratory in nature. In the first project, we tried to understand the major challenges and opportunities in the service supply chain in the DoD (Apte, Ferrer, Lewis, & Rendon, 2006) by undertaking in-depth case studies on the acquisition of services in three different organizations: Presidio of Monterey, Travis Air Force Base, and the Naval Support Detachment Monterey (NSDM). The second research project was targeted at studying the program management infrastructure (Apte & Rendon, 2007). In this same research project, we conducted two additional in-depth case studies of innovative project management approaches at the Air Education and Training Command (AETC) and at Air Combat Command (ACC).

The next two research projects were survey-based empirical studies aimed at developing a more comprehensive understanding of how services acquisition is being managed at a wide range of Army, Navy, and Air Force installations. Specifically, the third research project was aimed at understanding management of services acquisition in the Navy and the Air Force (Apte, Apte, & Rendon, 2008), while the fourth research project was aimed at the Army contracting centers (Apte, Apte, & Rendon, 2009).

The objective of the fifth research project, the preliminary results of which are being reported in this study is to analyze the primary data collected in earlier empirical studies involving the Army, Navy, and Air Force and to compare the results

so as to develop a more thorough and comprehensive understanding of how services acquisition is being managed within as well as across individual military Services. The analysis of survey results will focus on the following areas: contract characteristics, acquisition management methods, project-team approach, services acquisition leadership, and other management issues. The results of this analysis and comparison will be used as the basis to develop preliminary, department-specific recommendations for improving the management of the services supply chain.

The paper is organized into four sections, including the current introductory section. In the next section, we describe the empirical studies we conducted, including the survey research methodology we used in the study. We provide the results of the survey data analysis and some salient observations in the third section. The findings and conclusions of the study and our recommendations for improving services acquisition and for future research are presented in the fourth section. We wish to point out that the tables summarizing the survey data can be found in two previous technical reports by Apte, Apte, and Rendon (2008, 2009).

2.0   Research Methodology and the Empirical Studies

The methodology used in this research consisted of a survey instrument specifically developed to address the research objectives and questions mentioned in the Introduction section. This was a web-based survey instrument developed using the SurveyMonkey™ software. The developed survey was first pilot tested for its validity (Compton & Meinshausen, 2007) and was fine-tuned prior to its use in the third and the fourth research projects.

The survey began with questions that focused on specific demographic data and then asked specific questions related to the approach, method, and procedures used in the acquisition of services for specific categories of services. The categories of services targeted in this research were (1) professional, administrative, and management support, (2) maintenance and repair of equipment, (3) data processing and telecommunications, (4) utilities and housekeeping, and (5) transportation and travel. These categories were selected because collectively they represent a significant fraction of spending for all the services, and are commonly acquired in Army, Navy, and Air Force.

The survey instrument included core questions related to the methods and procedures used in the acquisition of services for the service categories mentioned in the paragraph above. These core questions focused on the following areas:

Contract Characteristics. The purpose of this category of questions was to gain insight into the dominant procurement methods and contract types used in the acquisition of services. The contract characteristics examined in this section were degree of competition (competitively bid or sole source), contract type (fixed price or cost type), and type of contract incentive (incentive fee, award fee, or award term).

Acquisition Management Methods. The purpose of this broad category of questions was to understand the management methods and approaches used in the

acquisition of individual services at each phase of the contract management process. For each of the contract management phases, the survey asked whether the phase was conducted at a regional, installation, or some other organizational level. This core question category also focused on whether a project-team approach was typically used in the acquisition of the respective service category. The questions explored the position of the services acquisition project team leader, such as a program/project manager or contracting officer. The questions also explored information on the owner of the requirement for the service being acquired.

Other Program Management Issues. This last category of core questions focused on the use of a lifecycle approach, the length of assignments for services acquisition management personnel, the use of market research techniques, the level of staffing in services acquisition management, and the level of training of services acquisition management personnel. These questions used a Likert-type scale to measure the level of agreement or disagreement among the respondents' statements.

The questionnaire described above was used to conduct surveys in all three military Services. What follows is a summary of these survey-based empirical studies.

- Army: The standardized survey was deployed to 81 contracting offices. The survey was distributed across 8 major contracting centers throughout the Army, including 40 Army installations. We received a total of 61 responses to the survey, with a survey response rate of 75%.

- Navy: The data was collected in the Navy survey at the installation level. The data inputs were provided by the Navy Regions in charge of the installations in CONUS. We received inputs from 6 Regions, covering 66 Navy installations plus Naval Supply (NAVSUP) and Naval Medical Logistics Command (NMLC).

- Air Force: The survey instrument was deployed to 50 Air Force Contracting Squadrons, representing 6 Air Force major commands. There were 34 responses from the survey, resulting in a 68% response rate. These responses represented all 6 Air Force major commands.

3.0 Analysis and Comparison of Survey Data

In this section we present the results of our analysis of survey data concerning the acquisition management practices in the Army, Navy and Air Force, arranged into the data categories described in the Research Methodology and the Empirical Studies section.

3.1 Contract Characteristics

We discuss three aspects of contract characteristics: degree of competition, type of contracts, and contract incentives. It should be noted that the Navy and the Air Force surveys were conducted in 2008, while the Army survey was conducted in 2009. Consequently, the Army survey results contain data for 2008, while the data streams for the Navy and the Air Force surveys end in 2007. We used the contract characteristic data for 2007 and computed averages across services and acquisition phases to obtain measures of contract characteristics. The comparison of contract characteristics for the Army, Navy, and Air Force is depicted in Figure 2.

2A. Degree of Competition

2B. Contract Type

2C. Contract Incentive
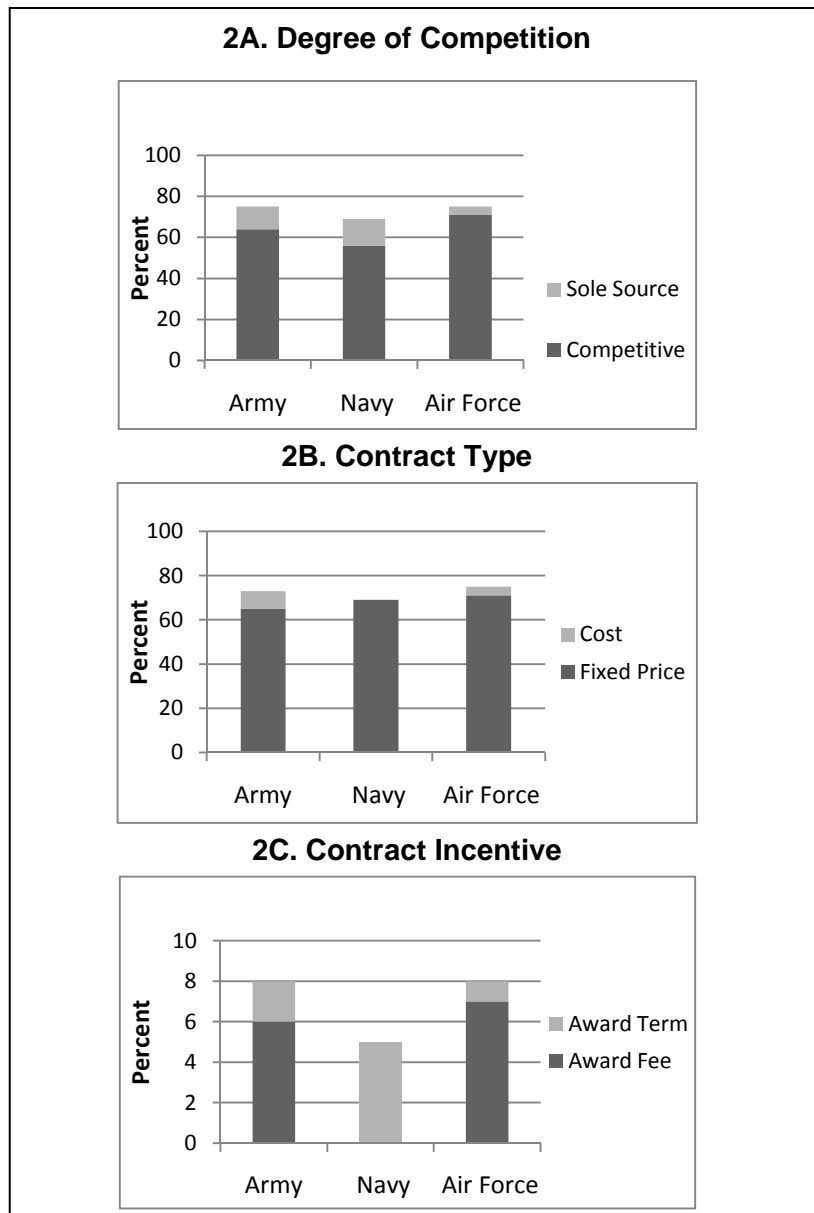
Figure 2.   Contract Characteristics

Degree of Competition

Providing for full and open competition is a public policy and statutory requirement in government contracting. The Competition in Contracting Act of 1984 (CICA) is a public law enacted to increase the number of government procurements conducted using the procedures of full and open competition. Unless the government can justify an exception to the competition requirements, the

procurement must provide for full and open competition in the solicitation and award of the contract. In addition to supporting accountability and transparency in government contracts, competitive procurements also result in competitively priced proposals that increase the government's ability to negotiate a fair and reasonable contract price.

As we note in Figure 2A, the predominant procurement approach used in the services we studied was full and open completion. Since these services— administrative, maintenance, data processing, utilities/housekeeping, and transportation services—are traditional and commercial in nature, it would follow that the competitive marketplace would be capable of proposing and competing for these contracts. However, we also note that a small but notable portion of contracts for Navy and Army were sole sourced. We do not have detailed data on these sole-sourced contracts, but perhaps the services acquired were context specific and unique in nature.

Contract Type

The Federal Acquisition Regulation categorizes the major contract types as fixed-price and cost reimbursement. Each of the various types of contracts (specifically cost-reimbursement versus fixed-price contracts) reflects the sharing and allocation of risk between the buyer and the seller. Fixed-priced contracts are appropriate for well-defined requirements in situations with a low performance risk. By using these types of contracts, the contractor holds the major burden of risk. On the other hand, under cost-reimbursement contracts, which are appropriate for developmental requirements, the performance risk is high. In these types of contracts, the government shares the major burden of risk. Given the commercial and low-risk nature of the services being studied, firm-fixed price contracts would be the appropriate contractual instrument for these service projects. We note in Figure 2B that, as expected, a significant majority of the contracts were fixed price.

Contract Incentive

In some situations, the government may want to subjectively incentivize the contractor to meet higher levels of performance and go beyond the basic requirements of the contract. In these situations, award-fee or award-term contract incentives may be used. In award-fee/term contracts, the contractor may earn additional money (or contract periods of performance for services contracts), based on the government's evaluation of the contractor's superior performance. Since commercial services are usually well understood and the output or outcome can be reasonably well defined, there is less need to use contract incentives. This observation is reflected in Figure 2C.

3.2 Acquisition Management Methods

In this subsection we provide a comparison of Army, Navy, and Air Force practices in two areas: the organization level at which services are acquired and the use of a project-team approach. The comparison is shown in Figure 3
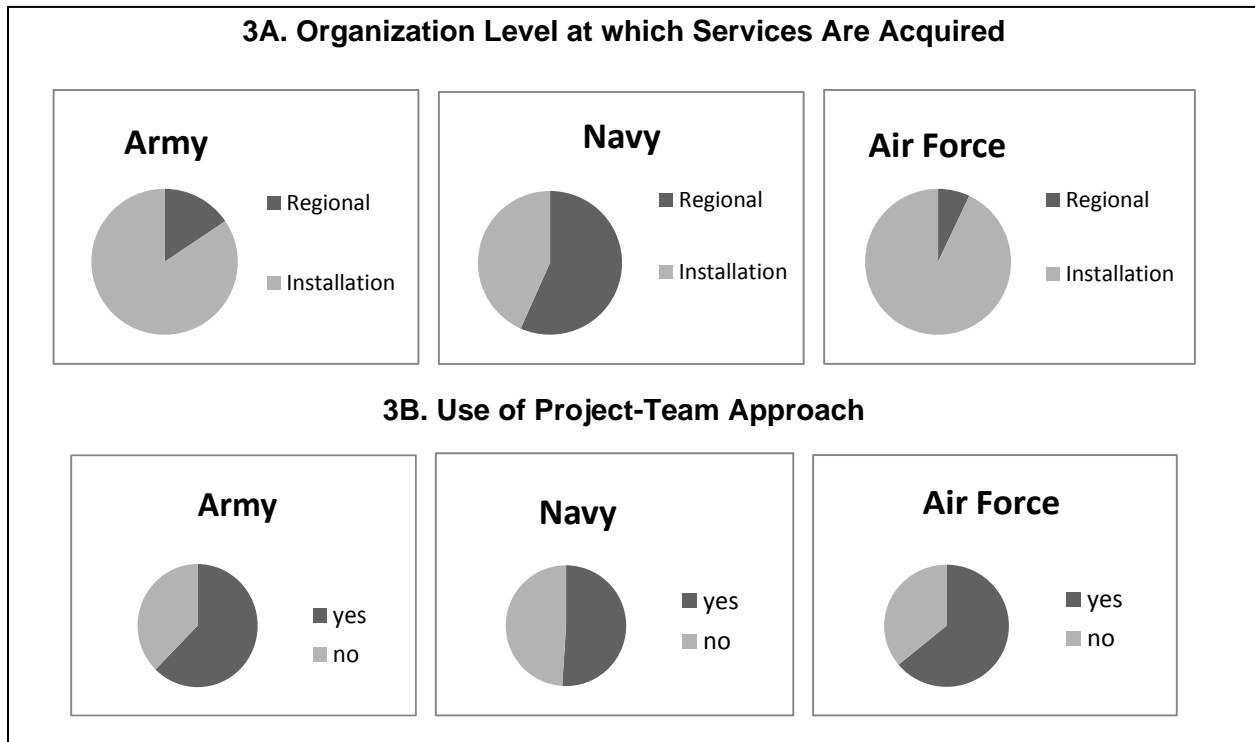
3A. Organization Level at which Services Are Acquired

Army
- Regional
- Installation

Navy
- Regional
- Installation

Air Force
- Regional
- Installation

3B. Use of Project-Team Approach

Army
- yes
- no

Navy
- yes
- no

Air Force
- yes
- no

Figure 3.   Acquisition Management Methods

Organizational Level at Which Services Are Acquired

The military departments procure services and manage services acquisitions at the installation level or regional level. The proximity of locations where the acquisition contracts are managed and where the services are actually performed may have an impact on the effectiveness of the project management, as well as the success of the services projects. Services performed at one location, with the contract and overall project managed at a distant location, may result in less than adequate management and control of the project as well as less than proper surveillance of the service contractor.   Insufficient control of the project and less than adequate surveillance of the service contractor increases the risk to the DoD of not receiving the full value of its service procurement dollars.

However, in general, it is not possible to say if acquiring services at one specific approach — regional-level or installation-level — is necessarily better than the other approach. The regional approach (centralized procurement) can give rise

to economies of scale, uniformity of procedures, and the possibility of consistently using best acquisition practices. On the other hand, installation-level acquisition (decentralized procurement) allows for easier implementation of project management and program management approaches, including accurate requirements definition and proper surveillance. Under either approach, however, a key to success is adopting suitable management practices.

We note in Figure 3A that services acquisition in the Navy takes place predominantly at the regional level, whereas services acquisition in the Army and the Air Force occurs predominantly at the installation level. As we discuss later in this section and the next, this difference in approaches has a significant influence on effectiveness of various management practices such as the use of the project-team approach and the position of the person who provides the contractor surveillance .

Project-Team Approach

Service acquisitions, such as information technology services or aircraft maintenance services, are typically technically complex and require support from various functional areas such as engineering, procurement, finance, and logistics. Best practices in project and contract management reflect the use of project teams— specifically cross-functional teams—in the management of services projects. The use of project teams facilitates the proper integration and control of the various functional disciplines involved in the project effort. Insufficient control and functional integration of project activities increases the risk of not achieving the project's cost, schedule, and performance objectives.

We note in Figure 3B that the Army and Air Force use the project-team approach more frequently than the Navy, which uses it slightly more than 50% of the time. A plausible explanation is that, in general, when services are acquired at the installation level, the physical proximity of personnel can make it easier to establish and use the project teams in managing acquisition. Thus, the use of the regional

approach by the Navy means that it has less opportunity to use the project teams. Perhaps a virtual-team approach may need to be adopted by the Navy.

Acquisition Leadership

In addition to the use of project teams, another best practice is formally designating a trained project manager/leader with the authority to lead the project effort. The project manager is typically a coordinator and integrator of the various functional disciplines involved in the project and has overall responsibility for the project's success. The project manager is focused on the overall objectives of the project and on integrating and balancing the interests of the various functional disciplines (engineering, procurement, finance, and logistics) involved in the services project. Figure 4 provides answers to the question: Who leads the services acquisition project, a contracting officer (CO) or quality assurance evaluator (QAE)/contracting officer representative (COR)? Figure 4A shows that when a project team is used, the CO predominantly leads the services acquisition project in the Army and Air Force and leads it only slightly more than half of the time in the Navy. Figure 4B also shows that when a project team is not used, the CO predominantly leads the services acquisition project in the Air Force and Navy and leads it only slightly less than half of the time in the Army.
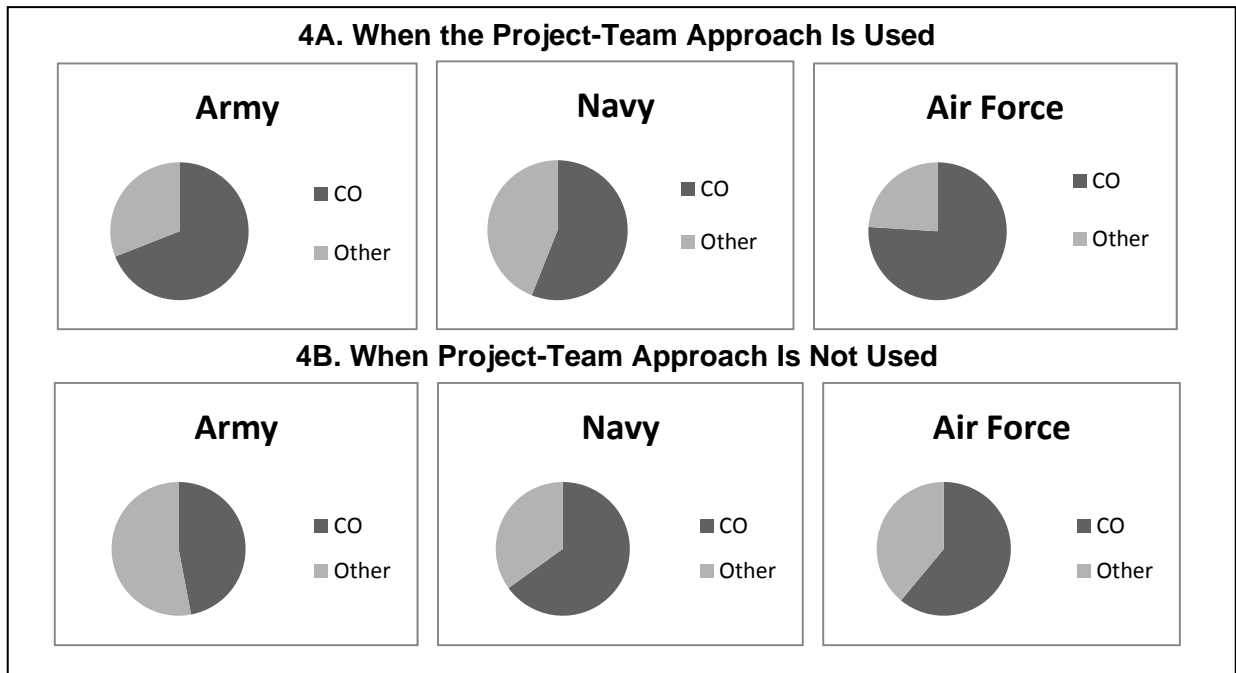
4A. When the Project-Team Approach Is Used

Army	Navy	Air Force
Army pie chart — ■ CO ■ Other	**Navy** pie chart — ■ CO ■ Other	**Air Force** pie chart — ■ CO ■ Other

4B. When Project-Team Approach Is Not Used

Army	Navy	Air Force
Army pie chart — ■ CO ■ Other	**Navy** pie chart — ■ CO ■ Other	**Air Force** pie chart — ■ CO ■ Other

Figure 4.   Acquisition Leadership

Requirement Ownership

Services acquisition includes managing the requirement. The requirement is the specific service that is being procured—for example, information technology services or aircraft maintenance services. It is important to note that the contract management process and, more specifically, the authorities and responsibilities of the contracting officer, do not include requirements management activities (such as determining the requirement, modifying the requirement, assessing the effectiveness of the requirement, or terminating the need for the requirement).   These requirements management authorities and activities belong to the requirements manager of the organization responsible for the service being procured. Once the requirements organization identifies, develops, and defines the requirement, the contracting organization performs the contracting activities to procure the needed service. Contracting officers, however, may support the development of the requirements documents by providing business and procurement expertise in this

area. For example, an aircraft maintenance squadron would own the aircraft maintenance service requirement being procured by the contracting organization for that specific installation. Figure 5 provides data on who owns the requirements, the CO or QAE/COR
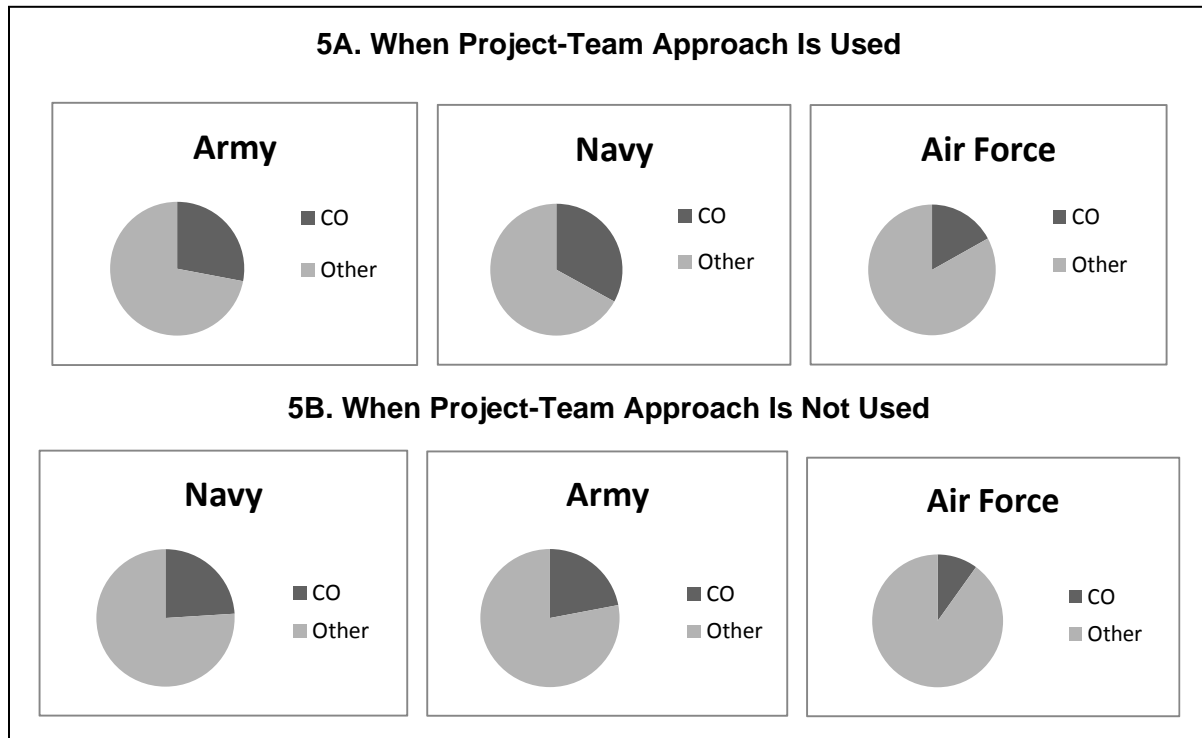

Figure 5.   Requirements Ownership

In general, the practice of having a contracting officer (CO) lead the acquisition, or own the requirements is not appropriate, regardless of whether a project-team approach is used. What is surprising from the survey data shown in Figure 4 is that the project teams are frequently led by the contracting officer as opposed to by a formally designated project manager responsible for the overall service project's success. We consider this finding surprising since the contracting officer is a functional specialist concerned with ensuring that the contractor is in compliance with the government rules about the contracts, while a project manager is concerned with the overall success of the project, in terms of cost, schedule, and performance objectives. In addition, a project manager typically represents the service requirement owner and is typically authorized to make changes to the

requirement during contract performance. Contracting officers do not have the authority to make changes to the service requirement and, traditionally, do not have the expertise or technical knowledge to make such changes (for example, making changes to the requirements for aircraft maintenance service). The role of leading project teams involves managing the requirement and authorizing related technical changes to the requirement during contractor performance. We also observed the following in Figures 4 and 5:

- As seen in Figure 4 for the Army and Air Force, the use of a project team increased the probability of the CO leading the services acquisition.

- As seen in Figure 4 for the Navy, perhaps due to regional organization, the use of project teams decreased the probability of the CO leading the acquisition.

- The above two trends are also observed in Figure 5 for the requirements ownership.

3.3   Program Management Issues

The first set of program management issues we investigated was the scope and ability of personnel responsible for services acquisition. Figure 6 provides comparative data on this count.
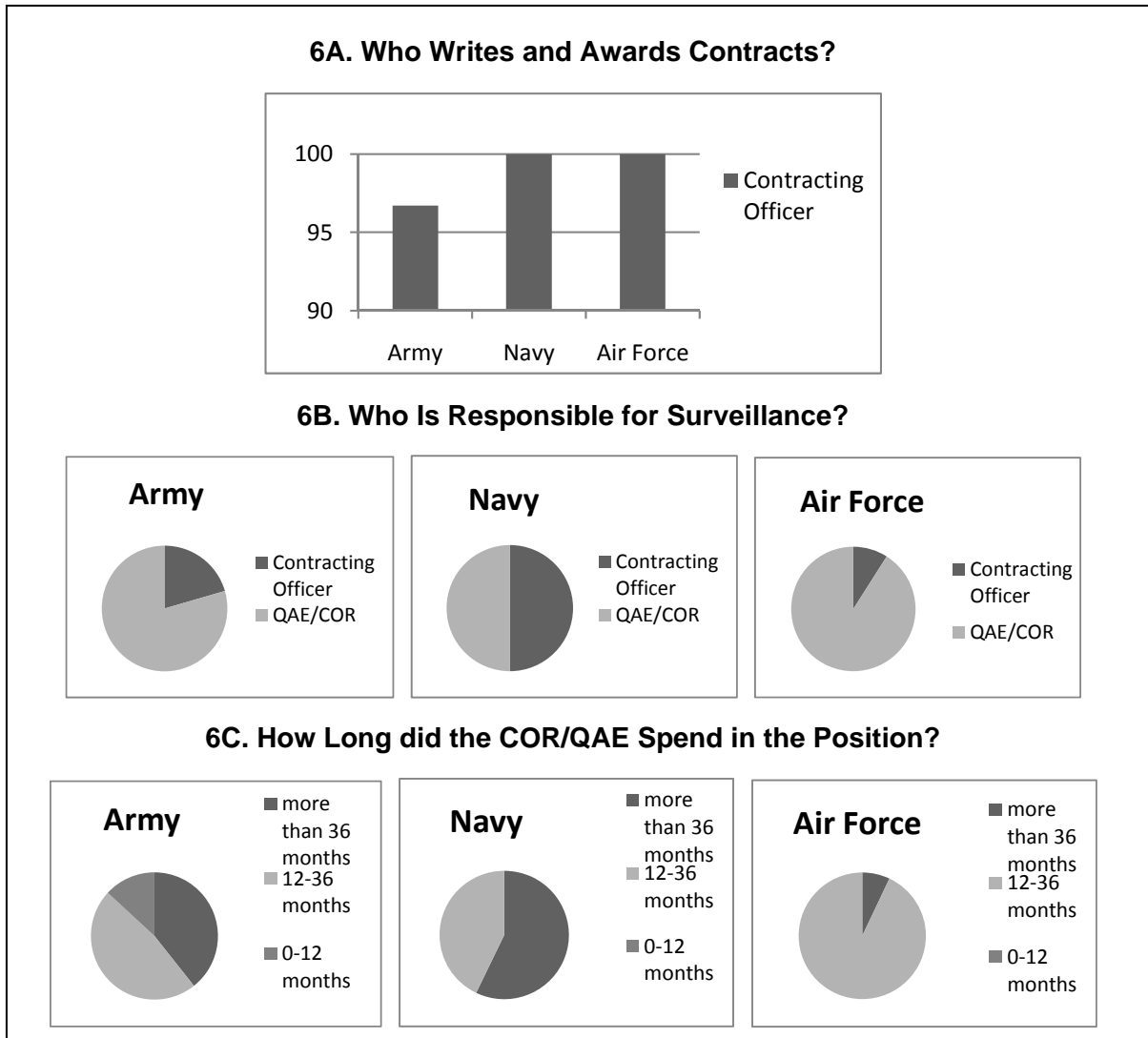
6A. Who Writes and Awards Contracts?

6B. Who Is Responsible for Surveillance?

6C. How Long did the COR/QAE Spend in the Position?

Figure 6.   Scope and Ability of Personnel Responsible for Acquisition

Contractor Surveillance

We note in Figure 6A that, as expected, the contracting officer always writes and awards contracts in the Navy and the Air Force. In the Army, the CO predominantly writes and awards the contracts. It is unclear why this is the case.

Another critical aspect of services acquisition is contractor surveillance. Contractor surveillance ensures that the contractor's performance complies with the requirements of the contract and, thus, the government is receiving the services procured. Due to the technical nature of many services contracts, contractor

personnel should be knowledgeable about the technical aspects of the service and be ideally drawn from the technical community responsible for the service requirement. Thus, it is critical that surveillance personal have the requisite technical skills for conducting contractor surveillance.

We note in Figure 6B that, as expected, in the Air Force and the Army, QAE/CORs predominantly provide contractor surveillance. However, in the Navy, QAE/CORs provide contractor surveillance in about 50% of the cases, with the contracting officer shouldering that responsibility in the remaining cases. These results indicate another situation in which contracting officers may be performing activities outside their area of expertise—in this case, performing contractor surveillance. Contractor surveillance involves technical knowledge and expertise in the service requirement area. A contracting officer, considered a business advisor with expertise in government contracting rules and regulations, should not be performing technical contractor surveillance on an aircraft maintenance service contract. Perhaps this is related to and caused by the regional approach to services acquisition being adopted by the Navy.

Finally, we studied the length of time COR/QAEs spend in their assigned position. The comparative data is presented in Figure 6C. We note the following:

- The majority of COR/QAEs in the Air Force were assigned in the position for less than three years. Perhaps this is caused by significant turnover in staff.

- In the Navy, a significant percentage of COR/QAEs were in the job for more than three years. Interestingly, this seems to be the case in spite of the fact observed earlier that the contracting officer is responsible for surveillance half of the time.

The final category of survey data consisted of other miscellaneous issues related to services acquisition program management. These include the use of the lifecycle approach in routine and non-routine services, the adequacy of services acquisition billets, responsibility of various staff members, and the training given to these staff members. The comparative data is presented in Figures 7 and 8.
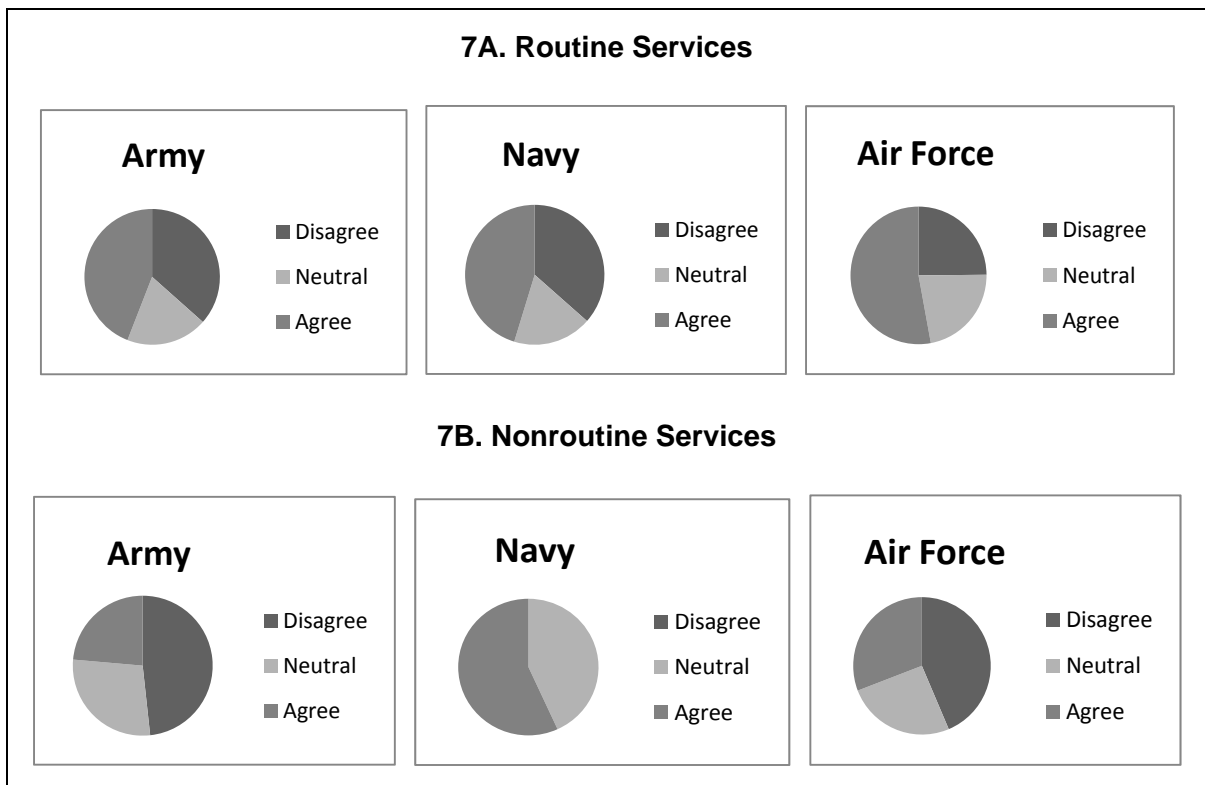
7A. Routine Services

Army	Navy	Air Force

7B. Nonroutine Services

Army	Navy	Air Force

Figure 7.   Lifecycle Approach

Lifecycle Approach

The use of a lifecycle to manage and control the progress of a project is considered a best practice in project management (Rendon & Snider, 2008). The project lifecycle allows the project to be managed in phases, with each phase controlled by gates and decision points. The use of a project lifecycle should be a concern for ensuring proper management of service projects, especially nonroutine services. If the services being procured and managed are of a nonroutine nature, one would expect higher levels of uncertainty—and, thus, higher levels of cost, schedule, and performance risk—in the management of these service projects. Best practices in reducing project risk include the use of a project lifecycle—with project phases, gates, and decision-points for monitoring and controlling the progression of the service project procurement process as well as the resulting service. Without the use of a project lifecycle, the service project may be vulnerable to excessive risk in terms of meeting cost, schedule, and performance objectives. This would

especially be true in the procurement and management of high-risk nonroutine services.

Figure 7A reflects that, for routine services, a lifecycle was predominantly used by the Air Force, and less so (approximately less than half of the time) by the Army and Navy. As seen in Figure 7B, a lifecycle approach was predominantly used for nonroutine services by the Navy, and less so (approximately less than half of the time) by the Army and Air Force.
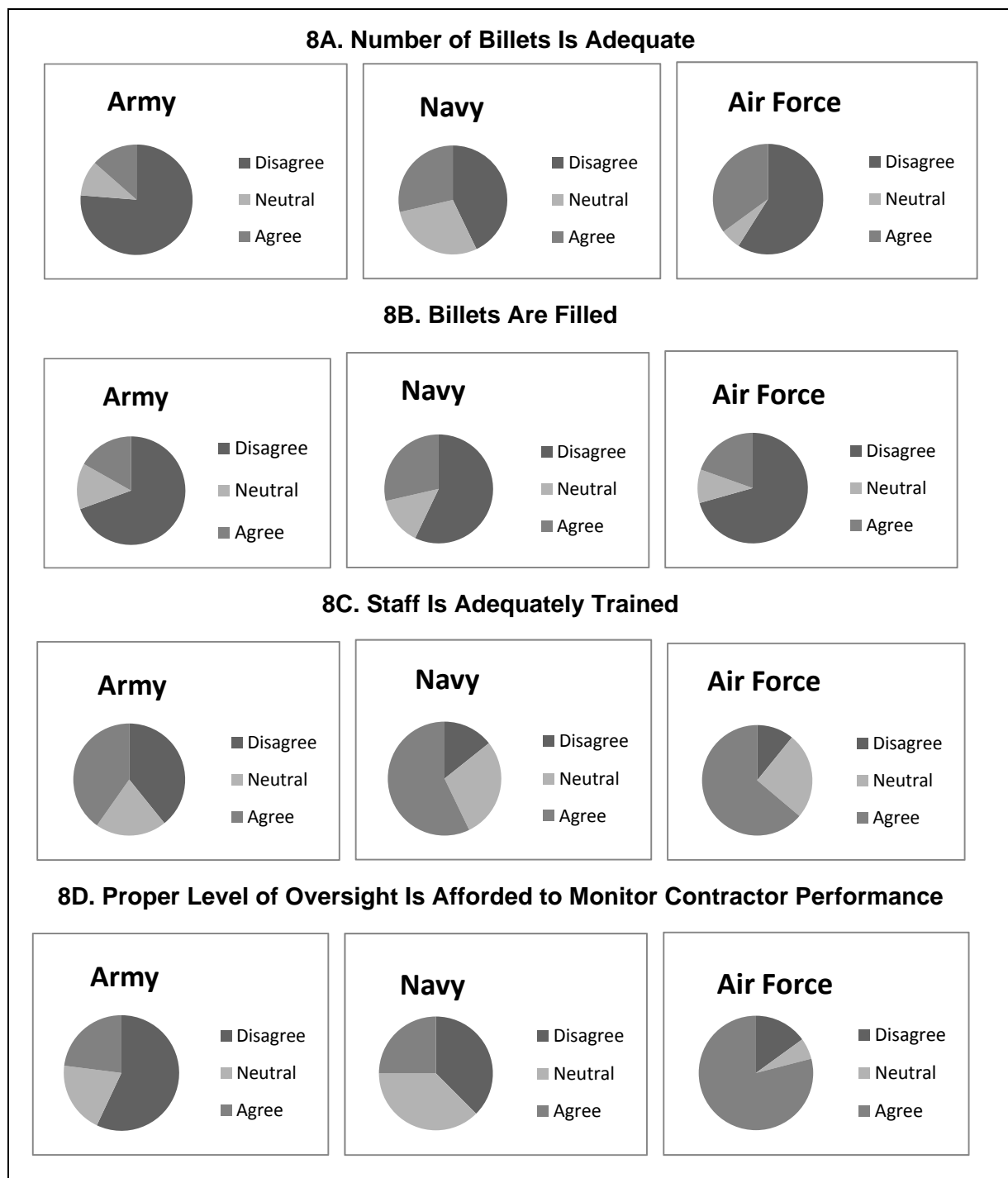
8A. Number of Billets Is Adequate

8B. Billets Are Filled

8C. Staff Is Adequately Trained

8D. Proper Level of Oversight Is Afforded to Monitor Contractor Performance

Figure 8.   Acquisition Billets

Service Acquisition Billets and Responsibility of Staff Members

The management of services acquisition is the responsibility of the services acquisition personnel located at the regional or installation organizations. Each acquisition organization has designated acquisition positions, or billets, for the acquisition personnel. In addition, these positions may or may not be filled, due to lack of personnel (perhaps personnel are deployed) or to the understaffing of organizations. These acquisition personnel are also required to receive the appropriate training reflective of their assigned acquisition duties, such as contracting officer, quality assurance evaluator, or contracting officer representative. Thus, having an adequate number of acquisition billets in an organization is not sufficient. These billets must be adequately filled, and the personnel filling these acquisition billets must be adequately trained. Having an adequate number of filled acquisition billets, staffed with trained acquisition personnel, is integral to providing a proper level of oversight for monitoring contractor performance. Finally, having a proper level of oversight is critically important for successful services acquisition management.

The pie-charts in Figure 8 display the survey responses for these areas. The following are salient observations on the charts:

- Figure 8A shows that the Army and Air Force predominantly disagree that there is an adequate number of acquisition billets, while the Navy survey responses were inconclusive.

- Figure 8B reveals that the Army, Navy, and Air Force all predominantly disagree that these acquisition billets are adequately filled.

- Figure 8C indicates that the Navy and Air Force predominantly agree that the services acquisition personnel are adequately trained, while the Army survey responses were inconclusive.

- Figure 8D suggests that the Army predominantly disagrees that a proper level of oversight is afforded to monitor the contractor's performance; the Air Force predominantly agrees that a proper level of oversight is afforded to monitor contractor performance, and the Navy survey responses were inconclusive.

4.0   Recommendations

To improve the management of services acquisition, our first recommendation is to maintain the positive trend of increasing the number of competitively bid, fixed-price contracts. These types of contracts promote competition, which ensures that the government gets the right services at the best value. Fixed-price contracts shift the risk of cost overruns away from the government and onto the contractor. This also serves to incentivize the contractor to complete tasks within budget.

Our second recommendation relates to the management of services acquisition at the regional versus installation level. As previously discussed, each individual approach has advantages and disadvantages. In our view, the key to success under either approach is to use the proper supporting management processes. Consequently, we recommend that the Navy adopt a more disciplined and rigorous project management approach to its management of services acquisition, possibly including a virtual project management team. This team would consist of the project manager, requirements manager, and contracting officer at the regional office. The QAE/COR would then serve as the site manager and be responsible for contractor surveillance. The QAE/COR would act as the "eyes and ears" of the regional project manager and contracting officer and would coordinate program and contracting issues back to the project manager. This might require QAE/CORs who have higher-level knowledge and skills due to their expanded roles and responsibilities. The Army and Air Force's installation-level management of services acquisition should ensure consistency in services acquisition management processes department-wide. Our recommendations include the establishment of dedicated installation project managers responsible for the overall cost, schedule, and performance requirements of the services acquisition. Additionally, the installation project teams should include a requirement manager or representative who is authorized to identify, manage, and change the services requirement during the contract period. Establishing a dedicated project manager and adding a

requirement manager/representative to the project team would relieve the contracting officer from performing these conflicting roles.

Our third recommendation to improve the overall management of services acquisition is to increase the size of the acquisition workforce, reversing the downsizing trend that began in the 1990s. The results of this research show that the number of CORs/QAEs also needs to be increased. Increasing the size of the workforce will allow for better oversight and will help ensure that contractor performance is properly monitored.

Our final recommendation is to increase the effectiveness and availability of training to ensure a qualified acquisition workforce. Based on the results from the research, a majority of respondents agreed that the acquisition workforce was adequately trained. Respondents also provided numerous negative comments regarding the poor quality of Training and the lack of training. The recommended training should focus on all phases of the contract management process and related Federal Acquisition Regulation (FAR) policy. Additionally, training in areas related to working in cross-functional teams and using project lifecycles should be provided to all acquisition workforce personnel. Finally, and more importantly, if the contracting officers are to continue acting as de-facto project managers by leading the acquisition teams, then they should receive training on project management concepts, project control techniques, and project leadership.

Given the total amount of money spent and the scope of services acquisition in the Department of Defense, the opportunity for conducting research in this important area is limitless. One area that stands out as needing research is contracting for medical services. We have already started to address this need.

Finally, as discussed earlier, the researchers in the fields of operations management and marketing have studied and identified several key characteristics of services that lead to differences in the production and marketing of services as opposed to manufactured products. We believe that the same key characteristics

must also be taken into account in designing and managing the processes involved in acquiring services. For example, intangibility of service outcomes makes it difficult to clearly describe and quantify services and, therefore, to contract for services. Intangibility of outputs also makes it difficult to define and measure quality. Co-production, which requires the presence and participation of customers in the creation of many services, is an important characteristic of services. Hence, the contracts for software development should ideally specify not only what the service provider should do but also what inputs the customer should provide. Otherwise, a satisfactory service outcome may not be realized. Diversity of services also makes it difficult and undesirable to use the same contract vehicles or procedures for different services. Finally, services are complex and may involve multistage processes. This makes it important yet challenging to write contracts that are flexible enough to cover all relevant scenarios and eventualities. Given these considerations, we believe that significant opportunities exist to conduct research into the impact of these characteristics on the acquisition of various services and the associated implications for the management of services acquisition processes.

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